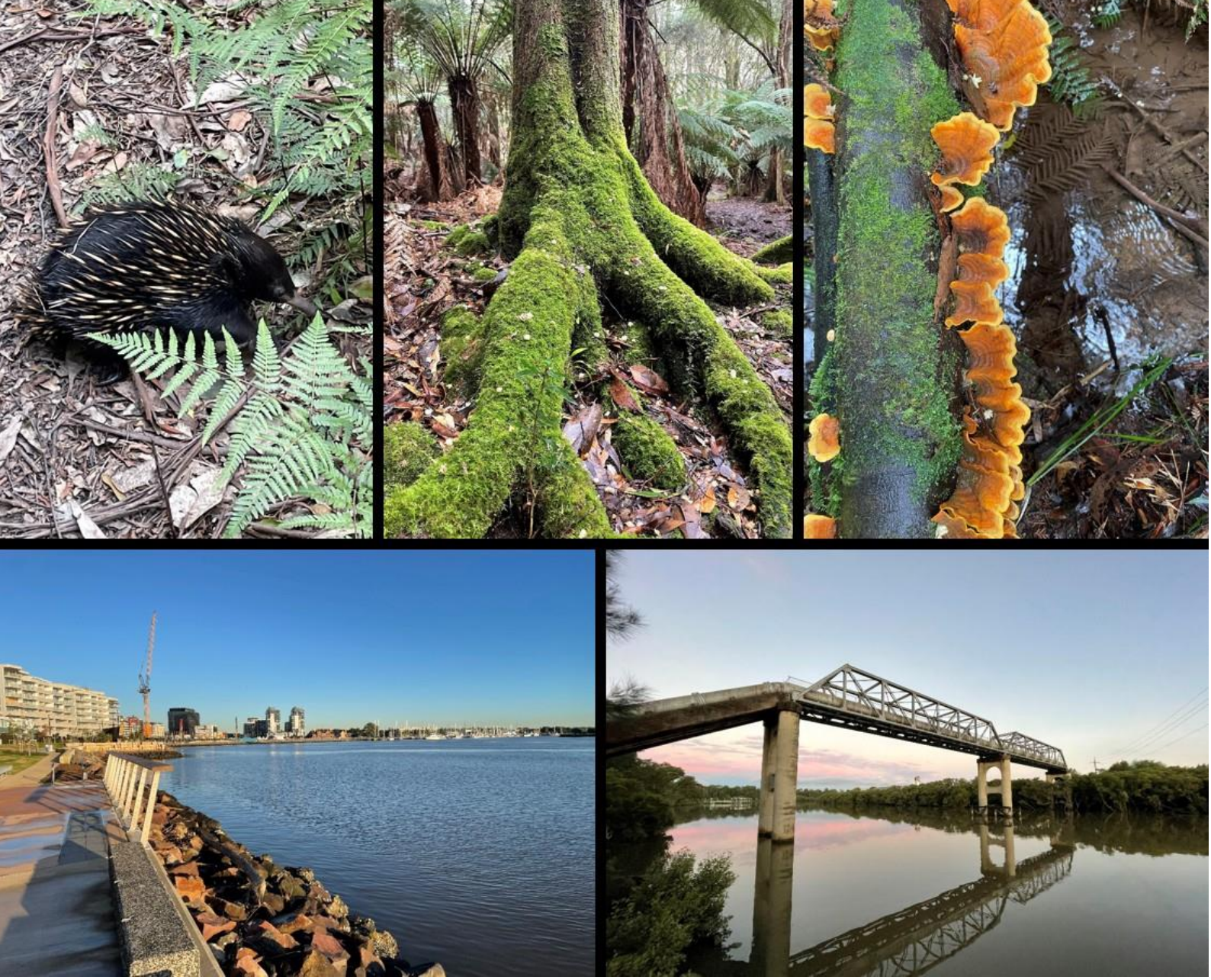

Human Health Risk Assessment: Rozelle Parklands – Summary

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Summary

Environmental Risk Sciences Pty Ltd (enRiskS) was engaged by NSW Health to undertake a human health risk assessment in relation to the presence of asbestos in recycled mulch at Rozelle Parklands.

The assessment found that risks to human health due to the presence of small amounts of asbestos containing materials in the recycled mulch were negligible based on Australian national guidance.

A summary of the assessment completed for these materials is provided below.

Resource recovery system

In NSW, wastes, as with many other aspects of pollution control, are managed under the *Protection of the Environment (Operations) Act (POEO) 1997* and its supporting regulations. These regulations make it an offence to do anything with waste apart from disposal. This means reuse of waste is not permitted. This approach was adopted to make it very clear that dumping waste etc was illegal.

An additional system was created to actually allow the reuse of some waste materials because there are waste materials that can be beneficially reused. The Resource Recovery Order and Exemption system provides the way for particular wastes to be available for reuse in NSW as long as the materials are in compliance with the Orders/Exemptions.

The resource recovery system provides the NSW EPA with powers to exempt certain wastes from some of the normal requirements of the POEO Act and Regulations, where such material will be reused as long as that reuse:

- is genuine, rather than being an alternate means of waste disposal
- is beneficial or fit-for-purpose
- will not cause harm to human health or the environment.

Recycled mulch is permitted for use under a NSW Resource Recovery Order and Exemption (NSW EPA 2016a, 2016b). Recycled mulch is to be made from waste timber/wood to minimise the amount of natural wood to be taken from forests/plantations for use as mulch. The Order makes it clear that such mulch must not contain the following materials:

> *asbestos, engineered wood products, preservative treated or coated wood residues, or physical contaminants, including but not limited to glass, metal, rigid plastics, flexible plastics, or polystyrene.*

Mulch at Rozelle Parklands

Mulch supplied under this Order was placed in a variety of locations across Rozelle Parklands. In early January, the presence of fragments of bonded fibro type material was identified within the mulch that had been placed around the parklands and these fragments were analysed at a laboratory to check for asbestos fibres.

The key risk related to the presence of asbestos is potential for small fibres to be present and for these fibres to move into the air when the material or soil is disturbed or via wind erosion, and for

people to inhale these fibres in the air. Hence exposure to asbestos relates to the inhalation of these small fibres. This depends on the potential for asbestos fibres to be present and how easily they could move into the air.

What is asbestos?

Asbestos is a naturally occurring mineral present in the ground in many locations around Australia. The fibres are widespread in soil especially where ore bodies are located.

Because of the widespread use of asbestos as well as their natural occurrence, the fibres are ubiquitous in the environment. Asbestos fibres are commonly present in normal urban air. Such fibres are present due to historic uses including insulation materials, brake pads and linings in vehicles and building materials. Asbestos fibres are also present because this is a naturally occurring material, where fibres can be disturbed from rocks containing the mineral deposits when such are near the ground surface or during ground disturbance (i.e. excavation etc) (enHealth 2013).

Man-made asbestos containing materials (ACM) can be divided into two types – bonded and friable asbestos.

Bonded ACM is primarily cement sheeting (“fibro”) which had asbestos fibres added to provide strength and endurance. Such sheeting contains about 15% asbestos fibres. The remaining 85% is cement. The asbestos fibres are bound in the cement. The only way the fibres can come out of the sheeting is if it is broken into pieces (or cut or drilled into pieces during construction). If this occurs, asbestos fibres may be released. Other materials where asbestos fibres are bound tightly within a material (e.g. held in glue on the back of flooring tiles for strength and endurance) could also be described as similar to bonded ACM.

Friable asbestos is primarily loose fill type asbestos that was blown into ceiling spaces or used in the lagging around pipes as insulation before the ban on the use of asbestos in Australia came into force. This material is around 100% asbestos. The terminology of friable asbestos is also applied to heavily weathered pieces of bonded ACM where the cement is soft and easily crushable so that the asbestos fibres in the bonded material may be released and move into the air.

Background exposure to asbestos

Everyone in the community is frequently exposed to a low level of asbestos fibres. The issue that needs to be considered when assessing potential risks due to ACM is whether the presence of these materials could result in much higher levels of asbestos fibres in air – i.e. significantly different from usual background levels.

International agencies such as the World Health Organisation (WHO), US Agency for Toxic Substances and Disease Registry (ATSDR) and RIVM (Dutch Environment Agency) have provided summaries of measured asbestos fibres in air in many locations around the world (ATSDR 2001; Oomen & Lijzen 2004; Swartjes & Tromp 2008; WHO 2000). They report that the concentrations of asbestos fibres in urban air range from 3 to 50,000 fibres/m^3. The lowest background levels listed are 100-1,000 fibres/m^3.

The RIVM documents indicate that a background air concentration of 1,000 fibres/m^3 is appropriate for most urban areas when undertaking a risk assessment. This value has been adopted for this assessment.

Guidelines for asbestos

Health effects from exposure to asbestos have been identified by studying people who were exposed at work – occupational studies. The link between effects and exposure was suspected over a century ago, but it wasn't until the 1960's that the link became well established.

As asbestos fibres are widespread in the environment, this means everyone breathes in asbestos fibres during their lifetime. The risk resulting from this background exposure appears to be of little consequence as the incidence of asbestos-related disease is extremely low in the general population.

The risk of asbestos-related disease increases with increasing dose or exposure. At low levels of exposure, the risk will be low. At high levels of exposure, risk will be higher.

Asbestos related disease from exposure to asbestos fibres is related to breathing in large amounts of asbestos fibres in the air. There are national and international guidelines for asbestos fibres in air.

National guidelines for asbestos in soil have also been developed in Australia (NEPC 1999 amended 2013) based on these international guidelines for asbestos fibres in air combined with the likelihood that fibres in soil could move into the air where they can be breathed in. The guidelines provide different values depending on whether the asbestos is present as bonded ACM or as friable asbestos.

These guidelines are based on:

- ensuring minimal risk to people if a person was exposed to guideline levels over their lifetime
- the asbestos in soil guidelines are designed to result in no measurable change in background air concentrations of fibres.

2024 Investigation

Mulch supplied under the Resource Recovery Order was placed in a variety of locations across Rozelle Parklands and in other locations.

In early January, the presence of fragments of bonded fibro type material was identified within the mulch that had been placed around the Parklands. These fragments were analysed at a laboratory to check for asbestos fibres.

NSW EPA then undertook, and required others to undertake, further detailed sampling at Rozelle Parklands and at other locations.

Sampling was undertaken of individual fragments of fibro material found in the mulch, other fragments of materials present in the mulch that may contain asbestos, bulk samples of the mulch and of air. All samples were sent to NATA accredited laboratories for analysis (i.e. the National Association of Testing Authorities).

The results of air sampling conducted at Rozelle Parklands between early January 2024 and the completion of works to remove the mulch in March 2024 did not find any detectable levels of asbestos fibres in air.

The bulk samples of mulch were not found to contain detectable levels asbestos fibres even at a trace level.

Around 15% of the fragments collected from the mulch at the Parklands and thought to possibly be bonded ACM were found to contain asbestos fibres – i.e. 85% of fragments that looked like bonded ACM were more modern materials that did not contain asbestos fibres.

Conclusion

The risk assessment found that the mulch complied with the national guideline for recreation/ parkland land uses so the risk to human health was negligible. In fact, the amount of bonded asbestos in the mulch is at a level for which any loss of asbestos fibres into the air will be so low that there will be no measurable change in background concentrations of asbestos fibres in air.

This conclusion was the same whether the asbestos containing materials were bonded ACM or for the situations where the materials were labelled as friable by the testing laboratories.

Where “friable” fibres were reported by the testing laboratories, the materials appeared to be pieces of building and demolition waste. The material labelled as friable was either very small pieces of weathered fibro type material or paper backing on vinyl tiles where the fibres were bound in the glue. None of these materials identified in the mulch were the higher risk types of friable asbestos like that used in insulation in roofs or as lagging on pipes.

Regardless of the conclusion of negligible risk, it is still considered appropriate/best practice to remove, where possible, materials containing fragments of asbestos containing materials.

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